TECHNICAL REVIEW DOCUMENT
For
RENEWAL of OPERATING PERMIT 95OPWE020

DCP Midstream, LP – Marla Compressor Station
Weld County
Source ID 123/0243

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I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The original Operating Permit was issued June 1, 1999, and expired on June 1, 2004. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted May 30, 2003, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at http://www.cdphe.state.co.us/ap/Titlev.html.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

This source is classified as a natural gas liquids processing and gathering facility defined under Standard Industrial Classification 4922. The Marla Compressor Station uses six (6) gas-fired internal combustion engines to drive compressors to transmit natural gas gathered from gas field laterals to a primary pipeline. All six engines are controlled through non-selective catalytic reduction (NSCR).

The station also includes two triethylene glycol dehydrator units that contacts "dry" triethylene glycol with the natural gas stream to remove moisture. The "wet"

glycol mixture is regenerated in a still for reuse in the process. The units are equipped with a condenser and enclosed flare for emission control.

Other equipment on-site includes four (4) 300-barrel condensate tanks, and fugitive equipment leaks. The condensate tanks store a mixture of hydrocarbon liquids and water separated from the inlet gas stream by a series of separation and scrubbing vessels. A loading system is provided for moving the liquid condensate material from the tanks into a truck for transport to another location for processing. This equipment is APEN Exempt and does not require any permit conditions. The Regulation No. 7 conditions for condensate storage/collection/handling in the 8-hour Ozone Control Area were not included since these tanks are APEN Exempt.

The plant is located west of the intersection of Weld County Road (WCR) 55 and WCR 40 on the north side of WCR 40. The area in which the plant operates is designated as attainment for all criteria pollutants. This facility is located in the 8-hr Ozone Control Area as defined in Regulation No. 7, Section II.A.16.

Wyoming is an affected state within 50 miles of the Station. Rocky Mountain National Park is a Federal Class I designated area within 100 kilometers of the Station.

DCP has requested that the Division remove two of the natural gas dehydration systems from the permit (S101 & S105). They have been removed from the station and replaced with unit P-112 (construction permit 01WE0506) and P-113 (construction permit 05WE0579). They request incorporation of permit 01WE0506 & 05WE0579 into the Operating Permit. They also request that the Division incorporate construction permits 01WE0503, 01WE0504 & 01WE0505 into the Operating Permit. DCP has submitted a CAM plan for the six compressor engines at this facility.

MACT Applicability

HHH – Natural Gas Transmission and Storage

This facility is not a natural gas transmission and storage facility as described in 40 CFR Part 63 Subpart HHH, “National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage”. This facility is an upstream natural gas production-related gathering and compression station and not subject to this MACT.

HH – Oil and Natural Gas Production Facilities

The construction permit (01WE0506) and renewal operating permit include HAP limits on the dehydrator in order to avoid applicability to the provision in 40 CFR Part 63 Subpart HH, “National Emission Standards for Hazardous Air Pollutants

From Oil and Natural Gas Production Facilities" (Oil and Natural Gas Production MACT).

ZZZZ – Stationary Reciprocating Internal Combustion Engines
Under the rules for reciprocating internal combustion engines, for production field facilities, only emissions from glycol dehydrators, storage vessel with the potential for flash emissions, reciprocating internal combustion engines and combustion turbines need to be aggregated to determine if the facility is a major source for HAPS. An analysis was conducted to determine HAP emissions from the equipment at this facility. Total HAP emissions based on permitted production was calculated to be 17.39 TPY, with no single HAP exceeding 8 TPY. Facility-wide HAP limits have been included in the Operating Permit to ensure that the facility is a synthetic minor source of HAPs. This is not a major source of HAPS and the RICE MACT does not apply to the Marla station.

Compliance Assurance Monitoring (CAM) Applicability

The six engines at this facility are equipped with non-selective catalytic reduction to control emissions. The potential to emit of the engines, without controls, exceeds major source levels and the engines are subject to an annual limit on NO_x, VOC and CO. A CAM plan was submitted for the engines with the Title V Operating Permit renewal application.

The natural gas dehydration units are equipped with a condenser and enclosed flare to reduce emissions of VOC and HAPs. The potential to emit of the units, without controls, exceeds major source levels for HAPs and the unit is subject to an annual limit on HAPs. A CAM plan was not submitted for this unit. The Division will include a CAM plan for this unit. DCP will review the plan and is encouraged to make comments for Division review.

Emissions

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to update the potential to emit based on revisions to permitted emission limits and to update actual emissions. Emissions (in tons per year) at the facility are as follows:

Pollutant	Potential to Emit	Actual Emissions
NO_X	225.78	225.78
VOC	105.99	132.93
CO	225.78	225.78
Total HAPS	20 combined/8 single	17.33

The PTE shown above is based on maximum emissions from the engines (8760 hours per year operation), and permit limitations for the dehydrators, and fugitive VOCs. Actual pollutant emissions from the engines, fugitive VOCs, and the dehydrator are based on the most recent APENs submitted to the Division. Note that actual emissions may exceed PTE due to changes in permitted equipment or addition of controls.

III. Discussion of Modifications Made

Source Requested Modifications

- **Glycol dehydration units** – Construction Permit 01WE0506 & 05WE0579
  DCP requested the removal of emission units P-101 and P-105. These glycol dehydration units were replaced with unit P-112 & P-113: TEG dehydration systems with condenser and flare. The P-112 start-up date was reported as December 10, 2001. The Final Approval Self Certification form was received by the Division on January 7, 2003 and the construction permit is incorporated into this Operating Permit as Final Approval.

  1. Applicable Requirements - The conditions of construction permits 01WE0506 & 05WE0579 were added to the Operating Permit. Since the previous Operating Permit was issued the Maximum Achievable Control Technology (MACT) provisions of 40 CFR Part 63 Subpart HH "Oil and Gas Production" have been issued. DCP has installed a condenser and flare to reduce the glycol dehydrator emissions, and flash emissions are vented back into the process. A permit requirement was added which requires flash gas emissions to be vented back into the process at all times, resulting in zero emissions from the flash tank. Construction Permit 01WE0506 was drafted to establish federally enforceable emissions limits reflecting the level of emissions from the condenser and flare. The federally enforceable emissions limits allow the potential Subpart HH affected sources to be classified as synthetic minor sources exempt from the Subpart HH provisions.

  2. Emission Factors- Triethylene glycol is contacted with the natural gas stream to reduce the moisture in the natural gas to a desired level. This glycol-water mixture is heated in the still vent portion of the unit to remove the collected moisture from the glycol. Volatile organic compounds and hazardous air pollutants entrained in the water are also released. The emissions from this process may be estimated using the Gas Research Institute's GLYCalc Model. The Model algorithm estimates the volatile organic compound and hazardous air pollutant emissions based on inputs of the glycol recirculation rate, cubic feet of gas processed, inlet temperature and pressure of the processed wet gas, and percentage breakdown by volume of constituents in the natural gas. The "worst-case" emissions were estimated using GRI GLYCalc 4.0 and submitted to the Division (dated August 31, 2005) during the construction permitting process.

3. Monitoring Plan - The Gas Research Institute's manual for the GLYCalc Model defines the wet gas (inlet) temperature, glycol recirculation rate, and gas BTEX content as the three critical inputs to the Model for triethylene glycol units. Changes to the gas flow rate and inlet pressure do not radically affect emissions from glycol dehydrators. The Division is requiring weekly monitoring of the following parameters, which are used in GLYCalc: glycol circulation rate, inlet gas temperature & pressure, and flash tank temperature & pressure. Condenser outlet temperature will be monitored on a continuous basis, and the highest daily temperatures will be used to determine an average. Samples of the inlet gas shall be collected and analyzed annually. Frequency of analysis will be changed if the BTEX content is shown to be inconsistent. The natural gas processing rate shall be recorded monthly. DCP has requested that the Division require monthly modeling using GLYCalc, instead of the parameter monitoring approach that most other sources prefer. The Division will allow this approach.

A condenser and flare are used to reduce the dehydrator emissions. DCP shall follow the current Operations & Maintenance Plan to maintain compliance.

CAM Plan Review

The source originally did not submit a CAM plan for the dehydration units with condenser and flare. CAM is required since the permit contains HAP limits and pre-control emissions of HAPs exceed 25 TPY (according to the worst-case emissions GRI GLYCalc runs). Upon request from the Division, the source submitted a proposed CAM plan.

Reduction of the emissions from the glycol dehydrator is required to meet permit limitations and these emissions are reduced with a condenser process and additional flare. The condenser outlet temperature indicates the level of performance occurring in the condenser because the outlet temperature is the essential value in using GLYCalc to estimate emissions from the condenser controlled glycol dehydrator. To achieve acceptable performance from the condenser, the outlet temperature must be kept below a certain level (i.e., a maximum temperature). If the outlet temperature is not in the proper range, the unit is assumed to be malfunctioning and needs to be repaired.

The Division feels that the condenser outlet temperature is an appropriate indicator for the condenser. An excursion would be a condenser outlet temperature in excess of 140º F. This is the temperature that was used in the worst-case GRI GLYCalc run submitted by the source. The source should monitor this indicator at least once per day.

Presence of a flame is the second indicator that will be used in the CAM plan. The Division finds this indicator appropriate and acceptable.

DCP did review the CAM plan and submitted comments to the Division. DCP has requested that the Division allow them to take an average daily temperature reading to show compliance with the requirement for the condenser outlet to remain below 140 °F. The Division will allow this averaging as the source has submitted a specific averaging approach, which will be included in the CAM plan.

- **Waukesha L-7044 GSI, 1680 HP Engines** – Construction Permits 01WE0503, 01WE0504 & 01WE0505

  DCP requests that the Division incorporate construction permits 01WE0503, 01WE0504 & 01WE0505 into the Operating Permit. DCP has also submitted a CAM plan for the six compressor engines at this facility. The start-up dates were reported as January 21, 2002 (01WE0503), June 6, 2002 (01WE0504), and February 15, 2003 (01WE0505). The Final Approval Self Certification forms were received by the Division on July 18, 2002 (01WE0503), and December 12, 2002 (01WE0504). The construction permits are incorporated into this Operating Permit as Final Approval.

  1. Applicable Requirements - The conditions of the construction permits were added to the Operating Permit. The Title V application identifies these engines as 4-cycle, rich burn engines equipped with air/fuel ratio controllers, turbochargers and non-selective catalytic reduction for emission control. These engines could be subject to the Maximum Achievable Control Technology (MACT) of 40 CFR Part 63, Subpart ZZZZ "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines" (RICE MACT). However, this facility is considered a Synthetic Minor source of HAPs, and MACT ZZZZ does not apply.

  2. Emission Factors- The emission factors for NO_x, VOC, and CO were reported in the Title V application in terms of g/hp-hr. The Division converted the emission factors to a fuel based emission factor (lb/MMBtu) based on the engine design data and fuel heating value. The emission factors are listed in the table below. Details of the conversion can be found on the Engineering Calculation sheet dated 2/15/2005.

Pollutant	Reported Emission Factor	Fuel Based Factor
NOx	2.0 grams/hp-hr	0.57 lb/MMBtu
CO	2.0 grams/hp-hr	0.57 lb/MMBtu
VOC	1.0 grams/hp-hr	0.28 lb/MMBtu

  The three engines were tested on 5/23/2002 & 11/26/2002 to determine compliance with the limits of the construction permit. All of the engines showed compliance with the NO_x and CO emission factors and permit limits. The table below lists the maximum results from the tests and shows that the engines are operating well below the permit limits and compliance emission factors:

Pollutant	Max. Emissions based on test	Permit Limit	Max. Tested Emission Factor	Permit Compliance Emission Factor
NOx	15.1 tpy	32.5 tpy	0.273 lb/mmbtu	0.57 lb/mmbtu
CO	3.3 tpy	32.5 tpy	0.056 lb/mmbtu	0.57 lb/mmbtu

3. Monitoring Plan – The operating permit has established a procedure for the calculation of emissions based on fuel consumption and a fuel based emission factor. The fuel consumption of each engine is determined by allocating fuel use to each of the engines based on monthly hours of operation and total engine fuel use.

The Divisions current (6/1/2006) portable monitoring language has been included in the permit. This requires the source to measure NOx and CO emissions quarterly.

The Btu content of the natural gas fuel shall be measured semi-annually (twice per year) using appropriate methods. DCP is also required to monitor the air fuel ratio controller.

CAM Plan Review

The source proposed to monitor for temperature of exhaust gas into the catalyst and oxygen concentration into the catalyst. The Division does not agree that the proposed indicators and ranges are appropriate to ensure the proper operation of the catalyst.

The source proposed daily records of the exhaust gas temperature into the catalyst. The acceptable temperature range that DCP proposed in the CAM plan was 650ºF to 1350ºF. This temperature range differs from the range DCP wrote into their Operation & Maintenance Plan that was submitted to the Division in February of 2002. The O&M Plan requests a range of 750ºF to 1250ºF. This range also matches the temperature range required in the RICE MACT. Even though the RICE MACT does not apply to this facility, it is considered presumptive CAM. Therefore, the CAM plan will contain a range of 750ºF to 1250ºF to be consistent with the O&M Plan and the RICE MACT. DCP did eventually agree that this range was acceptable.

The other indicator for CAM proposed by DCP was measurement of the oxygen concentration into the catalyst. The Division feels that since the RICE MACT requirements are presumptive CAM, that DCP should monitor the pressure drop across the catalyst as required by the MACT. DCP should maintain a pressure drop across the catalyst such that it does not change by more than three inches of water from the pressure drop across the catalyst measured during the

performance test. A performance test was conducted on two of these engines in 2002. However, it is not clear if the pressure drop across the catalyst was measured during those tests. In the event that the pressure drop was not measured during the performance tests, DCP can substitute the manufacturers specified range. The Division originally proposed a pressure drop change of no more than 2 inches. However, DCP submitted portable monitoring information on 3/23/05 which shows that the engines can comply with the permit limits over a larger pressure drop range. The Division feels that this information is enough to allow a change of up to 3 inches.

Temperature must be monitored on a daily basis and pressure on a monthly basis.

DCP requested that the pressure drop be allowed within 3 inches of water from the pressure drop across the catalyst baseline reading (to be determined within 6 months of catalyst maintenance or cleaning). The Division does not clearly understand what a baseline reading is, or how it ensures proper operation of the control device. It is also not clear how DCP will show compliance with CAM if this baseline reading is not conducted before issuance of the permit. The Division will revisit this request if DCP submits additional information to justify this request.

4. Compliance Status - Two of the engines were tested on 5/23/2002 & 11/26/2002 to determine compliance with the limits of the construction permit. Both of the engines showed compliance with the NO_x and CO emission factors.

- **<u>Fuel Conditioning Unit Fugitive VOC Emissions</u>**
  DCP requested the addition of fugitive emissions from a fuel conditioning unit to be added to the plant. Emissions will be emitted from component leaks. A revised APEN was received 2/15/2007 to request a more appropriate VOC limit.

  1. Applicable Requirements –
  - 1.03 TPY VOC emissions.
  - Compliance with NSPS KKK
  - The source must submit a NSPS KKK report detailing the specific applicable and non-applicable requirements of NSPS KKK within 6 months of permit issuance. This report will reviewed and used by the inspector to determine compliance.

  2. Emission Factors- Emissions are determined using appropriate emission factors from the EPA document: Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017).

  3. Monitoring Plan – The source must conduct a component count within 90 days of permit issuance. Records of component changes shall be maintained and a physical hard count shall be conducted at least every five years.

- The responsible official was updated as requested by DCP.
- The company name has been changed from Duke Energy Field Services, LP to DCP Midstream, LP.

Other Modifications

In addition to the modifications requested by the source, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

These changes are as follows:

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It should be noted that the monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

- Added language specifying that the semi-annual reports and compliance certifications are due in the Division's office and that postmarks cannot be used for purposes of determining the timely receipt of such reports/certifications.

Section I – General Activities and Summary

- The source description in Condition 1.1 was revised.

- The attainment status of Weld County was updated to reflect the 8-hr Ozone Control Area.

- Conditions 13 and 17 in Condition 1.4 were renumbered to 14 and 18 and Condition 21 in Condition 1.5 was renumbered to 22. The renumbering changes were necessary due to the addition of the Common Provisions requirements in the General Conditions of the permit.

- In Condition 1.4, General Condition 3.g (new general condition for general provisions) was added as State-only requirement.

- The language for the alternative operating scenario for temporary and permanent engine replacement was updated to reflect current language.

- Minor language changes were made to Condition 3.1 to more appropriately reflect the status of the source with respect to PSD.

- Based on comments made by EPA on another operating permit, the phrase “Based on the information provided by the applicant” was added to the beginning of Condition 4.1 (112(r)).

- Added a “new” Section 5 for compliance assurance monitoring (CAM).

- Summary table 6 has been updated.

Section II – Specific Permit Terms

Section II.1 - Unit C-148, C-135 & C-151: Waukesha L-7042 Engines

- Conditions 1.1 (emission limits & calculation) and 1.2 (fuel limits) were revised to reflect current language. The emission factors have increased from the previous permit. The fuel based emission factors were calculated during this renewal process and did not match the factors used previously. The Division was unable to determine why they have changed, but it may be the result of a difference in values used for gas heating value or horsepower.

- Condition 1.4 – Portable monitoring language was revised to reflect current language.

- Condition 1.6 – revised language to require monthly monitoring of AFR (changed from weekly).

- Condition 1.7 – Require source to comply with the O&M Plan.

- Condition 1.8 – Added the CAM requirement (see CAM Plan Review on page 7 of this TRD).

- Condition 1.9 – Added the Control of Emissions from Stationary and Portable engines in the 8-Hour Ozone Control Area.

Section II.2 - Unit P-106: Fugitive VOCs

- Removed the maximum equipment configuration limit. The Division is not typically putting these limits in the permits anymore.

- The equation in Condition 2.1 was modified to specify that the components should be multiplied by the weight % VOC.

- Removed the gas analysis requirement and referenced the similar requirement found in Condition 4.1.2.

- Condition 2.1.2 – Revised to require a running tally of component changes, and a hard count every 5 yrs.

Section II.6 – Compliance Assurance Monitoring

- The CAM plan for all engines was added to this section.

Section III – Permit Shield

- The citation in the permit shield was corrected.

Section IV – General Conditions

- Added language from the Common Provisions (new condition 3). With this change the reference to "21.d" in Condition 21 (prompt deviation reporting) will be changed to "22.d", since the general conditions are renumbered with the addition of the Common Provisions.

- The citation in General Condition 17 (open burning) was revised. The open burning requirements are no longer in Reg 1 but are in new Reg 9. In addition, changed the reference in the text from "Reg 1" to "Reg 9".

Appendices

- The list of insignificant activities was updated.

- Two Regulation No. 3 references were changed in Appendix B (page 9) & C (page 4).

- A new version of Appendix B & C was added. The annual compliance certification report no longer requires notification if the data was continuous.

- The fuel allocation calculation was moved to Appendix G from Section II. The other various calculation procedures from the previous permit were removed as they are not necessary.

- Added the CAM Plans to Appendix H & I

- Added a sample NSPS KKK report format to Appendix J.